

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of Claims

Claims 1-35 were present in the filing of the present application. By way of the Reply to the Restriction Requirement dated March 5, 2003, claims 1-13, 17, 27-30, and 33-35 were withdrawn from consideration. By way of the Reply of September 25, 2003, claims 14, 15, 18-20, 22-24, 26, 31, and 32 were canceled without prejudice or disclaimer, and claims 36-39 were added. By way of the Reply to the Restriction Requirement dated of December 5, 2003, non-elected claims except claims 16, 25, 38, and 39 were cancelled without prejudice or disclaimer. By way of the Reply of November 1, 2005, claim 40 has been added. Accordingly, claims 16, 25, and 38-40 are currently pending in the present application. Claims 16 and 40 are independent. Remaining claims depend, directly or indirectly, from claim 16.

Claim Amendments

Claim 16 has been amended in this Reply to clarify the present invention recited. This amendment is fully supported, for example, by Figs. 46(a) and (b) of the Drawings. Claim 40 has been amended in this Reply to clarify the present invention recited. This amendment is fully supported, for example, by Paragraph 0060 of the Specification and Figs. 46(a) and (b) of the Drawings. No new matter has been added.

Rejection(s) under 35 U.S.C § 112

Claim 40 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claim 40 has been amended in this reply to clarify the present invention recited. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection(s) under 35 U.S.C § 102

Claim 16 stands rejected under 35 U.S.C. § 102 (b) as anticipated by U.S. Patent No. 2,254,961 (“Harris”). For reasons below, this rejection is respectfully traversed.

Independent claim 16, as amended, recites a structure of an optical component. As shown in, for example, Figs. 46(a) and (b), the optical component of the present invention has a transparent mold resin 13, in which a light-reflecting portion 20 is insert-molded. A direct emission region 19 is formed in a convex lens shape at a center of a total reflection region 18 formed on a front surface of the mold resin 13, and a recess as an optical element portion 74 is formed on a back surface of the mold resin 13. A light-emitting element 12 is supposed to be disposed in the recess. As apparent from these figures, the thickness of the transparent mold resin 13 is smaller than a diameter of an outer edge of the light-reflecting portion 20 such that a mirror focus of the light-emitting element 12 with respect to the front surface is defined as a focal point of the light-reflecting portion 20. Thus, paraxial light from the light-emitting element 12 passes through the direct emission region 19 directly. While, marginal light is reflected by the total reflection region 18 and is incident on the light-reflecting portion 20 whereby a traveling direction of the light is unified, and, thereafter, the reflected light passes through the total reflection region 18. Advantageously,

the transparent mold resin 13 can be thin, obtaining a large emission area. See Paragraphs 0154 through 0156 of the Specification. In view of this, claim 16 includes the limitations of “a projection provided at a center of said reflective plane,” and “a length between a center of said projection and a boundary between said projection and said reflective plane is smaller than a length between the boundary and the outer edge of said curved reflective surface.”

Harris, in contrast, fails to show or suggest at least the above limitations as recited in claim 16. Harris merely discloses a lens formed in a particular shape. Specifically, the lens shown in Fig. 18 as pointed out by the Examiner has a forward plane face 86, a light source receiving well 87 in the rear face, with a forward wall of the well 87 formed as a central lens section 88, and the reflective margin 89 in parabola-shaped. It is noted that the central lens section 88 is not provided at the forward plane face 86. The central lens section 88 forms a part of the well 87. In the meantime, Harris discloses several configurations of lenses as shown in Figs. 4-15 having an elliptical projection at a forward surface (i.e., referred to as any of numerals 27, 42, 53, 57, 69, and 72). However, in any configuration that the elliptical projection is disposed at the forward surface as shown in Figs. 4-15, light from a light source is not at all reflected by the forward surface, or, even if the light is reflected by the forward surface, the reflected light is not further reflected by a parabolic surface to emerge out of the forward surface. In fact, there exists nothing in the whole of the Specification to teach or suggest that a forward surface reflects incident light directly passing through a spherical cavity and passes the light reflected by a parabolic surface through the forward surface. Thus, even if, *arguendo*, the elliptical projection corresponds to the projection as recited in claim 16, the forward surface is not the same as, or equivalent

to, the reflective plane as recited in claim 16.

Further, Harris fails to show or suggest the above limitation of “a length between a center of said projection and a boundary between said projection and said reflective plane is smaller than a length between the boundary and the outer edge of said curved reflective surface,” as recited in claim 16. As mentioned above, the lens of Fig. 18 in Harris does not have a protrusion at the center of the forward plane face 86. Thus, Harris cannot define a boundary between a projection and the forward plane face 86, and, accordingly, fails to show or suggest the above limitation as recited in claim 16.

In view of the above, Harris fails to show or suggest the present invention as recited in claim 16. Thus, claim 16 is patentable over Harris. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection(s) under 35 U.S.C § 103

Claim 40

Claim 40 stands rejected under 35 U.S.C. §103 (a) as unpatentable over Harris. For reasons below, this rejection is respectfully traversed.

Independent claim 40, as amended, includes the limitations of “a front portion of the transparent body comprises a reflective plane and a projection provided at a center of said transparent body,” “the size and shape of said light reflecting portion is selected such that a mirror focus of said light-emitting element with respect to a plane including said reflective plane is defined as a focal point of said light reflecting portion,” and “the size and shape of said projection is selected such that a length between a center of said projection and a boundary between said projection and said reflective plane is smaller than a length

between the boundary and the outer edge of said curved reflective surface.”

In contrast to the present invention, as mentioned above, Harris fails to show or suggest the projection as recited in claim 40. Further, there exists nothing in Harris to suggest that the size and shape of the parabolic surface is selected such that a mirror focus of the light source with respect to the forward plane face is defined as a focal point of the parabolic surface, or the size and shape of the projection is selected such that a length between a center of the projection and a boundary between the projection and the forward plane face is smaller than a length between the boundary and the outer edge of the parabolic surface.

In view of above, Harris fails to show or suggest the present invention as recited in claim 40. Thus, the claim 40 is patentable over Harris. Accordingly, entry and allowance of claim 40 is respectively requested.

Rejection(s) under 35 U.S.C § 103

Claims 25 and 39

Claims 25 and 39 stand rejected under 35 U.S.C. §103 (a) as unpatentable over Harris in view of U.S. Patent No. 5,485,317 (“Perissinotto et al”). This rejection is respectfully traversed.

As mentioned above, Harris fails to show or suggest at least the limitation of “a length between a center of said projection and a boundary between said projection and said reflective plane is smaller than a length between the boundary and the outer edge of said curved reflective surface,” as recited in claim 16, referred by claims 25 and 39.

Perissinotto et al. fails to teach that which Harris lacks. Perissinotto et al. merely

discloses an optical system for light emitting diodes having a cavity that is filled with resin material. Specifically, the inner lens 26 is integrated into the cavity 21 and formed by in-situ polymerization of a suitable resin. There exists nothing in Perissinotto et al. to suggest that a length between a center of a projection and a boundary between the projection and a reflective plane is smaller than a length between the boundary and the outer edge of a curved reflective surface.

In view of above, Harris and Perissinotto et al, whether considered separately or in combination, fail to render the present invention as recited in amended claim 16 obvious. Thus, claim 16 is patentable over Harris in view of Perissinotto et al. Claims 25 and 39 depend, directly or indirectly, from claim 16. Thus, these dependent claims are patentable for at least the same reasons. Accordingly, withdrawal of the rejection is respectfully requested.

Claim 38

Claim 38 stands rejected under 35 U.S.C. §103 (a) as unpatentable over Harris in view of U.S. Patent No. 6,264,347 (“Godbillon et al”). This rejection is respectfully traversed.

Godbillon et al. fails to teach that which Harris lacks. Godbillon et al. solely discloses an indicating light having a reflector formed in Fresnel echelons. There exists nothing in Godbillon et al. to suggest that a projection provided at a center of a reflective plane, or a length between a center of a projection and a boundary between the projection and a reflective plane is smaller than a length between the boundary and the outer edge of a curved reflective surface.

In view of the above, Harris and Godbillon et al., whether considered separately or

in combination, fail to render the present invention as recited in amended claim 16 obvious. Thus, claim 16 is patentable over Harris in view of Godbillon et al. Claim 38 depends from claim 16. Thus, the depending claim is also patentable for at least the same reasons. Accordingly, withdrawal of the rejection is respectfully requested.

Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 15115.005001).

Respectfully submitted,

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